VOICE OF THE DIABETIC

A SUPPORT AND INFORMATION NETWORK

The Diabetics Division of the National Federation of the Blind

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Insulin measurement devices for blind diabetics

by Janet Lee

Janet Lee (seated) demonstrates adaptive equipment at a diabetes and blindness seminar.

From the Editor: Janet Lee, a diabetic for 32 years, is First Vice-President of the Diabetics Division of the National Federation of the Blind. She works as the Diabetic Education Coordinator for the Independent Management for Blind Diabetics Program at BLIND, Inc. in Minneapolis, Minnesota. She was a health educator, an athletic trainer, and an Emergency Medical Technician prior to her work with diabetics at BLIND, Inc. In 1994 the governor of Minnesota named her to serve on the Statewide Independent Living Council and the Rehabilitation Advisory Council for the Blind.

This article should be helpful for anyone contemplating the procurement of adaptive equipment. Ms. Lee provides both detailed instructions for non-sighted use of the items listed below, and a thorough critique of their strengths and weaknesses.

Insulin Measurement Systems

There are a number of insulin measurement systems suitable for use by a diabetic who must employ non-sighted techniques. As the instructor for the Independent Management for Blind Diabetics Program at BLIND, Inc., I do not recommend insulin measurement systems that require sighted assistance or that rely on magnification devices. Most diabetics want and need to have complete control of how they manage their diabetes. If a diabetic cannot rely on vision to accurately measure insulin, then, to maintain independence, he or she MUST have effective alternative non-sighted techniques.

Some diabetics will find that at certain times of the day they can rely on their vision to accurately measure insulin. At other times visual acuity may fluctuate due to changes in blood glucose levels, blood pressure and/or the retention of body fluid. These changes may leave them guessing at their dose of insulin or relying on others to measure their insulin. A diabetic's eye condition can change daily, making him or her unable to use visual techniques.

The systems critiqued below are all usable by blind diabetics, without sighted assistance. Although there are other insulin measurement systems available as well, most of those require sighted assistance at some point. When a blind diabetic needs to adjust an insulin dose, it's inconvenient and sometimes impossible to find a sighted person to assist.

The Count-A-Dose

The Count-a-Dose insulin measuring device, manufactured by Jordan Medical Enterprises, 12555 Garden Grove Blvd., Suite 507, Garden Grove, CA 92643: telephone: 1-800-541-1193, or (714) 530-5123.

The Count-a-Dose has a suggested retail price of $49.95, but the National Federation of the Blind (NFB) distributes both versions for $40. Order through: Aids, Appliances, and Materials Center, National Federation of the Blind, 1800 Johnson St., Baltimore, MD 21230; telephone (410) 659-9314.

The Lo-Dose Count-a-Dose is a simple system to learn, well-adapted to the use of non-sighted techniques. It allows a diabetic to measure one through 50 units of insulin in 1-unit increments, employing a 1/2 cc Lo-Dose B-D syringe. Small and very portable, it measures only 4½" by 2".

The Count-a-Dose consists of a rectangular plastic base and a T-shaped bar to hold the insulin bottles. In the upper right corner of the base is a raised plus sign (+); below the raised plus sign (+) is the click dial (thumb-wheel), which gives one audible and tactile click for each unit drawn. In the lower right corner is a raised minus sign (-). In the lower left

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Voice of the Diabetic is a national publication of The Diabetics Division of the National Federation of the Blind. It is read by those interested in all aspects of blindness and diabetes. We show diabetics that they have options regardless of the ramifications they may have had. We have a positive philosophy and know that positive attitudes are contagious!

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Insulin measurement devices for blind diabetics

(Continued from page 1)

corner is a raised lip, with a rounded side and a flat side. On the flat side, the plunger of the syringe is seated. Along the left side of the base is a channel running from the lower corner to the upper left corner. The barrel and flanges of the syringe lie in this channel. In the upper left corner is a clip that holds the barrel of the syringe in place. Notches secure the flanges. On the top of the Count-a-Dose is a small rectangular hole in which the T-bar is mounted. The T-bar of the Count-a-Dose has a small flat tab that slides into the rectangular hole on the base of the device. The cross piece of the T-bar contains two rubber-lined holes used to mount the insulin bottles. On one end of the cross piece is a single large raised dot, and on the opposite end of the cross piece are two large raised dots. These dots correspond to types of insulin. Most people place their short-acting or Regular insulin on the end with one dot, and the longer-acting insulin or NPH insulin on the end with two dots.

When mounting a syringe in the Count-a-Dose, you may seat the plunger and the flanges first and slide the barrel under the clip, or reverse the procedure. The syringe fits loosely under the clip, and the flanges on the syringe can be rocked from side to side. The flanges will seat in their notches properly only if they are pointed horizontally, one to the left and one to the right, as the syringe rests in the Count-a-Dose. If the click dial is not rotated all the way back toward the minus sign (returning the Count-a-Dose to zero) you will not be able to properly seat the plunger, the flanges, or the barrel of the syringe. The user may have difficulty mounting the syringe if the plunger of the syringe is not pushed completely into the barrel. If the plunger is out even a fraction, both it and the flanges of the syringe will fail to seat properly. Once the syringe has been mounted onto the Count-a-Dose's base, the T-bar can be slipped into the rectangular hole at the top of the base. Place your extended thumb or index finger in line with the hole. Place the tab of the T-bar against your finger and guide the T-bar into the rectangular hole. This technique eliminates the possibility of damage to or contamination of the needle.

The base of the Count-a-Dose and T-bar guide are positioned so that when the needle is inserted into the rubber stopper all but a very small amount of insulin can be drawn from the vial. It is absolutely necessary that the bottom of the insulin bottle(s) be pointed straight up toward the ceiling when insulin is being drawn with the Count-a-Dose. Eliminate the possibility of air bubbles in the syringe by first drawing some insulin into the syringe and then ejecting it back into the bottle. To do this, move the dial a few clicks toward the raised plus sign (+), then move the click dial all the way down to the raised minus sign (-). Repeating this procedure two or three times in succession will clear the syringe of any air bubbles.

The Count-a-Dose is designed to facilitate mixing two types of insulin in one syringe. To do this, draw the first type of insulin, then simply rotate the T-bar 180 degrees to measure the second type of insulin. Its instructions, provided in print (with illustrations) and on tape, include both a physical description of the Count-a-Dose, and an explanation of how to measure both a single type and a mixed dose of insulin, without the need for sight. NOTE: The cassette instructions are for the Lo-Dose model. There is no instructional cassette for the 2-unit version. Operation of the larger version is similar, but not identical.

When you receive your Count-a-Dose, be sure to save the box. If your Count-a-Dose should be defective, the manufacturer states you should return it to your distributor, or the manufacturer, in the original box. There are no serial numbers on the Count-a-Dose, but there is a "lot number" printed on the box.

Two versions of the Count-a-Dose exist. Here I have described the Lo-dose Count-a-Dose. Some aids and appliances dealers, medical supply houses and pharmacies (and the NFB Materials Center) may still have a supply of the original Count-a-Dose, which differs slightly, being beige in color, using a 1-cc B-D syringe, and measuring insulin from two units through 100 units in 2-unit increments. It carries the same price tag as the currently-manufactured Lo-dose Count-a-Dose. Jordan Medical Enterprises has no plans to resume manufacturing the 2-unit increment Count-a-Dose.

I use the Count-a-Dose, and I truly appreciate its flexibility, portability and durability. Diabetics with severe neuropathy, arthritis, or amputations can use their teeth as well as their hands to measure a dose of insulin. I have adapted the Count-a-Dose to measure other types of injectable medication. I have also provided instruction on the Count-a-Dose to sighted individuals who do not have the physical control over their fingers or hands that they would need to manipulate a syringe and insulin bottle.

Syringe Support

This device is manufactured in Canada by the Fondation Centre Louis-Hebert, 525, Boulevard Hamel Est, Aile J, Quebec City (Quebec) Canada GIM 2S8. Telephone (418) 529-6991. It costs $14.95 (U.S.). Instructions for the device (and the catalog for the Louis-Hebert Fondation) are in French.

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The Syringe Support uses only the B-D 1cc disposable syringe, and measures insulin in 1- or 2-unit increments. Measuring 7¾ inches by 3/4 inches, it is small, lightweight and reasonably sturdy. The Syringe Support has a dial that calibrates a set screw which can be adjusted to measure doses of insulin from one to 100 units. The plastic dial is at the base of the device. A set screw is located above the dial, and the brackets that hold the barrel of the syringe are located halfway up the device above the screw. The syringe fits very securely into the Syringe Support by slipping one flange into a hole located just above the first set of brackets. Another set of brackets near the top of the device secures the barrel of the syringe. The needle of the syringe extends, at the top of the device, into an insulin vial guide and holder.

The Syringe Support lacks tactile indicators for the set screw dial. A diabetic with neuropathy or arthritis would have a great deal of difficulty rotating the dial and monitoring an exact dose. The dial rotates with little resistance, and it is difficult to determine which landmark on the base of the device represents zero. The insulin vial guide at the top of the Syringe Support is too shallow to guide the rubber stopper of the vial cleanly onto the needle. If the guide for the vial was an inch longer, it would make measuring mixed doses of insulin much easier.

The instructions indicate that a diabetic should tap on the side of the syringe to remove bubbles from the dose of insulin. This is a useless technique for a blind person. A blind diabetic could more easily and reliably remove bubbles from the syringe by drawing insulin into the syringe and injecting it back into the insulin vial two or three times before measuring the first type of insulin (the same technique used with the Count-a-Dose and insulin gauges). The remainder of the instructions are very succinct and easy to understand — if you can read print written in French.

The Syringe Support could be very helpful to blind diabetics. It is inexpensive, lightweight, sturdy, small and portable. It has the flexibility to measure in both 1- and 2-unit increments and is accurate when used properly. However, many blind diabetics cannot use it. The Count-a-Dose and the individually modified insulin gauges serve a much broader population of blind diabetics.

The Palco Load-Matic

The Palco Load-Matic is available from Palco Labs, Inc., 1595 Soquel Drive, Santa Cruz, CA 95065, 1-800-346-4488; in California (408) 476-3151. Its cost is $49.95.

This device is designed to allow a diabetic to measure 10-unit increments and/or single-unit increments of insulin. It uses only 1cc B-D syringes.

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Adjusting insulin

by Barry H. Ginsberg, MD, PhD

From the Editor: Reprinted courtesy of Dr. Barry Ginsberg, who is Medical Director of Becton-Dickinson, the largest manufacturer of syringes in the U.S. I first saw this article in the April 1993 edition of *Diabetes Interview.*

Introduction

Learning to adjust your own insulin is an important aspect of learning to be part of the diabetes health care team. Changing your insulin, daily if necessary, allows many patients to gain the best possible control of their diabetes. In order to adjust insulin, you must know how and when insulin works and how your insulin dose relates to your meal plan and your exercise. Learning to change insulin is a complex task. In this article I hope to start you on the right path, but a full, in-depth understanding of how insulin works is beyond the scope of this article.

The adjustments that you make can be either ***reactive*** or ***predictive.*** The changes that you make in response to a single blood glucose are **reactive.** You are trying to correct an imbalance that has already led to a high or low blood glucose. The changes that you make in response to a pattern of abnormal blood glucose ***measurements, alterations in meal*** plan or exercise are **predictive.** You are trying to prevent the high or low blood glucose that might occur in the future. In this article I will try to tell you some of the "hints" that I use to help patients attain the best control.

You should be aware that every patient is different and that the recommendations presented here are averages for all patients. You *must* check with your own physician before you make any changes to your insulin therapy. Failure to check with your physician could result in serious low blood glucose reactions.

Philosophy of Insulin Therapy

Insulin therapy can be broken down into two broad categories: conventional insulin therapy in which you take two or fewer doses of insulin per day and intensive insulin therapy, in which you take three or more doses of insulin per day.

The major difference between these two types of therapy, however, is not in the number of doses of insulin each day but rather the philosophy of each of these therapies. In conventional insulin therapy the overriding philosophy is to match food to insulin whereas in intensive insulin therapy the overriding philosophy is to match insulin to food. Intensive insulin therapy requires you to obtain more diabetes education and be willing to do more glucose monitoring, but it frees you from many dietary and lifestyle limitations present with conventional insulin therapy. Although most people with diabetes in the U.S. currently use conventional insulin therapy, there is convincing evidence that diabetes control is better with intensive insulin therapy, and an increasing proportion of well-educated people with diabetes are using intensive insulin therapy.

The ultimate goal of all diabetes therapy is to bring your blood glucose as close to normal as possible. The best evidence supports the notion that the better your diabetes control, the less likely you are to get diabetes complications. Generally, people taking more injections each day have better blood glucose levels than those taking fewer injections. The number of injections you take each day is often limited by what you and your doctor are willing to learn and do. With modern technology and the sharpest needles, the injection of insulin is usually virtually painless and so it is usually the inconvenience of drawing up insulin or the fear of the injections, rather than the pain of the injection itself, that limits the number of times you take insulin each day.

Table 1
Peak Action of Insulin (Hrs)

Insulin	*Species*	
	Human	Animal
Regular	1-3	1.5-4
NPH	6-10	8-12
Lente	8-12	8-14
UltraLente	9-15	12-24

Adjusting Insulin with Conventional Insulin Therapy

In order to adjust insulin properly, you must know when it acts. Table I presents the *peak action time* for insulins (the time at which the insulin has its greatest action). For most people, Regular is the fast-acting insulin, and NPH or Lente is used as the intermediate-acting insulin. UltraLente, a very long-acting insulin, is usually used in intensive insulin therapy.

Single Injection of Insulin: A single injection of insulin will almost never give good control of Insulin-dependent diabetes and should rarely be used in this group. When used as a single shot of NPH or mixed NPH and Regular insulin in the morning, it produces very high levels of insulin after lunch and frequently leads to mid-afternoon hypoglycemia. The NPH or Lente insulin usually does not last through the next morning and so the person often also has high blood glucose in the morning.

In some people with Non-insulin-dependent diabetes, a single dose of insulin will give acceptable blood glucose levels, usually in combinations with an oral agent. In the most effective regimen, called BIDS (Bedtime Insulin, Daytime Sulfonylurea), a sulfonylurea (pill) is taken in the morning and insulin is taken at bedtime.

Split-Mixed Insulin: This is the most common regimen for people with Insulin-dependent diabetes and those with Non-insulin-dependent diabetes. In this regimen the person takes a combination of Regular and NPH insulin in the morning and another combination of the same insulins in the evening. The morning dose is usually not the same as the evening dose in either quantity or composition. The idealized curve of blood insulin concentration is shown in Figure 1. Since there are four insulins used, morning Regular, morning NPH, evening Regular or evening NPH, there are four peaks of insulin. In the figure, the peak action of each is shown in a different shade.

Figure 1

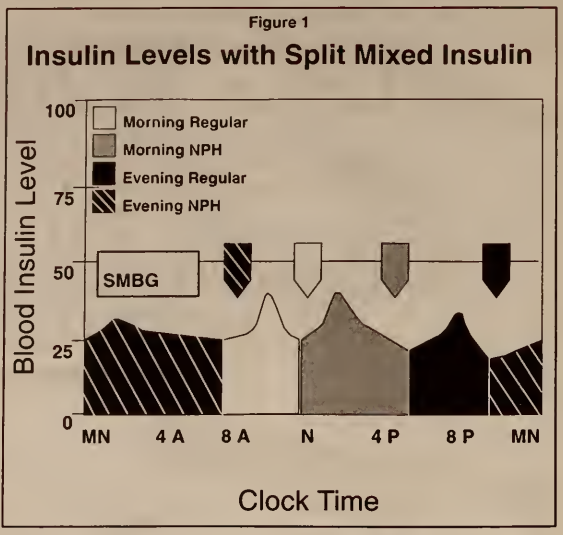

Table II
Relationship of SBGM to Insulin Adjustment

Time of SBGM	*Insulin to Adjust*	*Shade*
Pre-Lunch	Morning Regular	
Pre-Supper	Morning NPH	
Pre-Bedtime	Evening Regular	
Pre-Breakfast	Evening NPH	

Table III
Typical SBGM Log

Date	Pre-Breakfast	Pre-Lunch	Pre-Supper	Pre-Bedtime	Comments
2/23/93	107	198	102	128	
2/24/93	123	175	37	381	Sup-Overate for Rxn
2/25/93	117	198	95	135	

Adjusting your insulin requires a decision. It should be a rational one and a rational decision always requires information. The more information, the better the decision. You can only get your information for changes in insulin dose from blood glucose monitoring. Ideally, you should do this four times a day: before breakfast, lunch, supper and at bedtime. The time for monitoring for most people is shown as pentagons in Figure 1. Each monitoring value helps you make a decision about a single insulin. To help you understand this, the monitoring pentagons are shaded the same color as the insulin that you adjust using those values. These relationships are repeated in Table II.

Blood glucose monitoring data is most useful when you can find patterns that will help you adjust your insulin. It is easiest to find a pattern when you write your blood glucose down in an orderly, consistent fashion, using columns for each time of day. Many of the logbooks for keeping your blood glucose values allow you to do this. An example is shown in Table III.

When the values are lined up nicely, as in this logbook, many of the patterns are obvious. For example, we can easily see that over the three days covered here, the pre-breakfast values are nearly normal, the pre-lunch values are high, the bedtime values are nearly normal except for the period after overeating for a low

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Do you know a blind person?

Marc Maurer, President, National Federation of the Blind, leads the largest group of organized blind citizens in existence. The Federation has more than 50,000 members.

Do you know a blind person who needs help or information? Perhaps he or she is newly-blinded and having trouble adjusting to the loss of sight. Maybe he or she does not know about all the services that are available, such as Social Security benefits, rehabilitation, or library services.

Whoever it is — a newly blinded man or woman, a senior citizen with failing eyesight, a blind child or infant — we (the National Federation of the Blind) would like to try to help.

About 500,000 people in the U.S. are blind, and each year 50,000 more will become blind. Studies have shown that only cancer is feared more than blindness. However, blindness does not need to be the tragedy which it is generally thought to be. With proper training, knowledge, and opportunities blind people can be productive, first-class citizens.

But first the blind individual must know *where and how* to get the training and services he or she needs. We — you and the National Federation of the Blind — can work together to find and provide necessary information to the blind in our communities.

Here are some of the services available to the blind in our communities. For more specific information about any of these services, please contact us.

LIBRARY

Our state, like every state, has free library services for the legally blind. Books and magazines are available (on loan and free of charge) in Braille, large print, and on cassette and records. Special cassette machines and record players to use in listening to the taped or recorded reading matter are also loaned without cost to blind library users. For details about where and how to apply for services in your area you may contact us or your local library.

SOCIAL SECURITY BENEFITS

Social Security Disability Insurance (SSDI): Legally blind persons who have paid into the Social Security system may be eligible for SSDI under the special rules which apply to the blind. Legally blind senior citizens considering early retirement should first learn if they might qualify for more benefits under SSDI. *Supplemental Security Income (SSI):* Blind persons who have little or no regular income or savings may qualify for monthly payments under the SSI program. Again, there are special rules which apply only to the blind. Contact your local Social Security office for information and applications. We also encourage blind persons to contact us if they have any problems understanding the regulations, feel they have been unjustly denied benefits, or have other problems about which we may be able to provide information and guidance.

REHABILITATION

Every state, including this one, has a public rehabilitation or vocational rehabilitation agency which provides training, counseling, and employment placement services to the blind. Sometimes the service is provided directly, and sometimes it is contracted out to private rehabilitation facilities. Some funds through the rehabilitation agency are usually available to students for college education or other post-secondary training. Contact us for information about where to apply for services in your area.

EMPLOYMENT

Blind persons may use the regular public and private employment agencies just like anyone else. However because of widespread misconceptions about the abilities of the blind, special employment services are extremely helpful. Job Opportunities for the Blind (JOB) is a special nationwide job listing and referral service sponsored by the National Federation of the Blind in partnership with the U.S. Department of Labor. JOB uses recorded materials, computers and volunteers to help blind people find competitive employment. There is no charge for this service. To apply for services write to: JOB, 1800 Johnson Street, Baltimore, MD 21230; or call toll-free 1-800-638-7518.

SCHOLARSHIPS

Blind students can take advantage of the same scholarship programs that are available to sighted students and should be encouraged to do so. However, there are also scholarships which are only available to blind students. The National Federation of the Blind, for example, awards over $50,000 a year in scholarships to worthy blind students. Contact us for further details about these and other special scholarships for the blind.

CIVIL RIGHTS

There are federal and state laws and regulations which protect the civil rights of the blind in such areas as employment, education, housing, insurance, public transportation, and public facilities. If you know of someone who thinks he or she has been unjustly treated or discriminated against just because of blindness, please contact us. We will try to help.

PRODUCTS AND AIDS

Technology has made many useful products available to the blind. Some aids make daily life easier (example, the Braille watch) while others have opened up more employment opportunities for the blind (example, talking computers). Contact us for more information about local and national resources regarding products for the blind.

FREE READING MATTER MAIL PRIVILEGE

Recorded, Braille, and large print reading matter (including library books and magazines) may be mailed to and from blind persons free of charge if "Free Matter for the Blind" is written or stamped on the envelope or package. Braille watches, white canes, and other special appliances for the blind are included in this privilege. We will be happy to answer questions about the Free Reading Matter mail privilege.

PUBLICATIONS

The ***Braille Monitor*** is a monthly magazine published by the National Federation of the Blind: in Braille, in print, in cassette, and on disc. The ***Braille Monitor*** keeps blind and interested sighted readers informed about issues, news, and events which have special significance to the blind. A free subscription is available by writing to: ***Braille Monitor,*** National Federation of the Blind, 1800 Johnson Street, Baltimore, MD 21230 (be sure to designate whether the ***Monitor*** is desired in print, Braille, cassette or on disc). For information about local newsletters of special interest to the blind, contact us.

EDUCATION OF BLIND CHILDREN

The passage of Public Law 94-142, the Education of All Handicapped Children Act, established certain rights and protections for blind children and their parents. Blind children are now entitled to a free public education in the "least restrictive environment," and parents have the right to help plan their child's educational program. Contact us for more information about the education of blind children, parent organizations, newsletters, etc. Also, the National Federation of the Blind publishes a magazine for parents of blind children. This publication provides information and insights into all aspects of raising blind children from infancy to adulthood. A free subscription is available to parents or other interested persons by writing to: ***Future Reflections,*** National Federation of the Blind, Free Subscription Request, 1800 Johnson Street, Baltimore, MD 21230.

For information or assistance concerning any problem dealing with blindness contact your local chapter or state affiliate of the National Federation of the Blind or: National Federation of the Blind, 1800 Johnson Street, Baltimore, Maryland 21230, 410-659-9314. ■

The courtesy rules of blindness

When you meet me don't be ill at ease. It will help both of us if you remember these simple points of courtesy.

1. I'm an ordinary person, just blind. You don't need to raise your voice or address me as if I were a child. Don't ask my spouse what I want — "Cream in the coffee?" — ask me.
2. If I am walking with you, don't grab my arm; let me take yours. I'll keep a half-step behind, to anticipate curbs and steps.
3. I want to know who's in the room with me. Speak when you enter. Introduce me to the others. Include children, and tell if there's a cat or dog. Guide my hand to a chair.
4. The door to a room, cabinet, or to a car left partially open is a hazard to me.
5. At dinner I will not have trouble with ordinary table skills.
6. Don't avoid words like "see." I use them, too. I'm always glad to see you.
7. I don't want pity. But don't talk about the "wonderful compensations" of blindness. My sense of smell, touch or hearing did not improve when I became blind. I rely on them more and, therefore, may get more information through those senses than you do — that's all.
8. If I'm your houseguest, show me the bathroom, closet, dresser, window — the light switch, too. I like to know whether the lights are on.
9. I'll discuss blindness with you if you're curious, but it's an old story to me. I have as many other interests as you do.
10. Don't think of me as just a blind person. I'm a person who happens to be blind.

In all 50 states, the law requires drivers to yield the right of way when they see my extended white cane. Only the blind may carry white canes. You see more blind persons today walking alone. Not because there are more of us, but because we have learned to make our own way. ■

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Feelin' good

by CW03 Larry D. Nichols, USN (Ret.)

Larry Nichols is a retired career Navy man, who spent the last nine years of his service as a type II diabetic. He retired from the Navy in 1977, after 20-1/2 years service, with the rank of Chief Warrant Officer, 3d Class. He has only recently come to terms with his diabetes.

I felt good when I felt bad! I felt good because I didn't know I felt bad. I ate as much as I wanted, anything I wanted, and whenever I wanted. My diabetes, which I have known I had for 26 years, didn't have any effect on my life at all. What a pleasure it was to eat all sorts of candy and ice cream. Fried foods, eat-all-you-can seafood dinners, and salads light on lettuce but heavy on blue cheese dressing were just some of my favorite foods. Plus, food was never salted enough. I always took care of that by piling on extra salt. My wife ate many low-calorie, reduced-calorie, or low-salt foods. I always shunned such things, believing them to be "unmanly." Nothing but the "real stuff" for me!

There was, of course, the heart attack eight years ago, followed almost immediately by vision problems which were diagnosed as diabetic retinopathy. I also now have cataracts, so I use low-vision aids to help my vision. Several of the ophthalmologists at Walter Reed Army Medical Center who were following my retinopathy strongly advised me of the importance of keeping my blood sugar levels under control. The cardiologists urged sensible, low cholesterol, low sodium diets. I ignored 'em all.

A few years later I was diagnosed as having diabetes-related sexual impotency. A penile implant provided some assistance in that regard. Again, the urologists told me of the importance of controlling my diabetes. Did I listen even then? Naw!

Next I started having some new physical problems. I'd suffered from "acid indigestion" for many years and always took antacids two or more times per day. Now I was having difficulties in urinating. From things I had read and from commercials I had seen on TV, I thought I might be having prostate problems. The thought of prostate cancer did frighten me, where diabetes-related problems caused me no concern at all.

Three events then occurred which changed my life. First, my brother died of a heart attack and complications from diabetes. Second, my daughter and son-in-law applied lots of heat on me to do something about controlling my diabetes. They leaned on me unbelievably hard and I became really angry at them for meddling with my personal life. Third, I saw a doctor about what I thought was a prostate problem. Blood and urine test results showed that my prostate was fine but my diabetes was way out of control. The doctor, a general practitioner, urged me to see a diabetes specialist.

And I did! The micronase I had been taking for years — and which was, in fact, several years old because I had "stockpiled" it — was having no effect at all on my blood sugar levels. So I was introduced to insulin shots — two per day. I was hospitalized for several days for diabetes management, education, and training. I learned how to mix insulin in order to give myself combined doses of NPH insulin and Regular insulin. I learned how to monitor my blood sugar levels with a blood glucose monitoring machine. And I learned how to carefully regulate my diet with the proper foods.

Now I know what it feels like to really feel good. I also now know how bad I really felt before. The "acid indigestion" I had suffered from for years went away immediately. I haven't taken an antacid since beginning to take insulin. Although I occasionally miss the candy, ice cream, fried and heavily salted foods, I've learned to really like sensible salads with very small amounts of dressing or diet dressings. I've learned to eat the right foods from the six food groups. I've also learned there are lots of sugar-free candies, ice creams, frozen yogurts, and other items which are quite delicious and which can be taken in moderation. My wife has been tremendously supportive and has purchased several recipe books for diabetics. Some of the meals she prepares are truly delicious. My life has changed dramatically but my quality of life really hasn't gone down. If anything, my quality of life has improved significantly.

I have an additional incentive. Because of my years of neglecting my diabetes, I have been diagnosed as having Early Renal Disease. If I take care of myself and follow my diet closely, I may well forestall serious kidney problems later on, such as the necessity for kidney dialysis or even a kidney transplant.

While I was in the hospital for diabetes management, a dietitian wanted to ask me a question. Her question was, "Mr. Nichols, you are obviously an intelligent person. Why is it that you have ignored your diabetes all of these years?" I may or may not be an intelligent person. But I could not answer her question. I could only mumble that my mother, who was a diabetic, was stubborn also.

Today I am a new person! I understand — really understand — the need to control my diabetes. I understand that life does not end when you are a diabetic, nor does the quality of life go down. I wish I could help or influence others who are or were like me to take charge of their diabetes. It's a matter of life or death. Feelin' good is a wonderful thing! ■

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What type of diabetes do you have?

by Nicholas N. Abourizk, MD

Dr. Nicholas Abourizk is the director of the Diabetes Care Center at St. Francis Hospital and Medical Center in Hartford, Connecticut. He is also an associate professor of medicine at the University of Connecticut School of Medicine.

Type I, type II, gestational, borderline, insulin-requiring, insulin-dependent, noninsulin-dependent, atypical, youth-onset, adult-onset. These are all names used to describe diabetes mellitus.

Diabetes comes in almost as many types, shapes and forms as the people who have this disease.

You may start off being diagnosed as having one form of diabetes, which eventually changes to another form of the disease.

Although scientists are not sure of the specific causes of all types of diabetes, they do know that diabetes may change from one form to another. These changes make it difficult to establish a permanent classification for the type of diabetes you may have. These changes also may require modification in how your diabetes is treated.

For example, you may start out being able to control your diabetes by diet and exercise alone. Over the years, however, you may require an oral agent. And later in life, you may need to add insulin injections to your treatment program.

You may have been told at initial diagnosis that you had type II, noninsulin-dependent diabetes. But ten years later, your disease may have progressed to the point where you required insulin, but still remained a person who has type II diabetes.

This may all be quite confusing. To clear things up for you, here are the definitions of the different diabetes classifications (according to current scientific opinion).

1a) **Type I, insulin-dependent diabetes.** (Also called youth-onset or juvenile diabetes, or IDDM.) This type of diabetes occurs when the beta cells in the pancreas stop producing insulin. A person with this form of diabetes depends on insulin injections for survival. This type of diabetes usually starts, rapidly, in youngsters.

A person who has type I, insulin-dependent diabetes must continue to take insulin injections throughout his lifetime.

A person who injects insulin — whether he has type I or type II diabetes — is at greater risk for hypoglycemia (low blood glucose) than a person who controls his diabetes with diet and exercise alone.

A person with type I diabetes is also at increased risk for ketoacidosis, a complication that occurs when blood glucose levels soar high above the normal range.

1b) **Adult-onset type I diabetes.** This form of type I diabetes develops slowly in adults over the age of 30. It may be initially diagnosed as noninsulin-dependent diabetes, but it gradually switches into insulin-dependent diabetes.

2a) **Type II, noninsulin-dependent diabetes.** (Also called adult-onset diabetes or NIDDM.) This type of diabetes actually encompasses a number of diseases. In most cases, there is insulin resistance or insulin deficiency — which means the person's body is producing some insulin, but is not able to efficiently use this insulin.

Type II is often a progressive disease that develops slowly and often is diagnosed in persons over the age of 40.

Although this type of diabetes is more common in obese people, it also occurs in lean people and often tends to run in families.

In the early stages, this type of diabetes can be treated with diet and exercise. As it progresses, oral agents and then insulin injections may be required.

During a severe illness, during treatment with certain medications or during surgery, a person with type II diabetes may be placed temporarily on insulin injections.

2b) **Youth-onset type II diabetes.** This is a type of noninsulin-dependent diabetes that is diagnosed in teens and preteens.

There is usually a strong family history of type II diabetes in youths who develop this form of diabetes.

3) **Impaired glucose tolerance.** (Formerly called borderline diabetes.)

A person with IGT does not have diabetes, but has an abnormal glucose tolerance — which places him at risk for both heart disease and full-blown diabetes.

There are twice as many people in the United States who have IGT than those who have diabetes.

4) **Atypical diabetes.** This type of diabetes comes and goes. It starts as insulin-dependent diabetes, then goes away for years and comes back as noninsulin-dependent diabetes.

Scientists don't know why this happens, but they do know that this type of diabetes is quite different from type I, insulin-dependent diabetes.

Atypical diabetes occurs most often in black people, particularly those who have a history of atypical diabetes.

5) **Gestational diabetes.** This form of diabetes develops in about five percent of all pregnant women. A woman with untreated gestational diabetes is

(Continued on page 13)

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Letters to the editor

Mary Nothstine
Mocksville, NC
April 1, 1994

Dear Ed,

Our county has its Health Fair April 10th. We are all excited over that and our group will be there, so hope all goes well. The stacks of ***Voice of the Diabetic*** will be on display. I do appreciate you sending them to me.

The people here in North Carolina love it! I notice they have gotten into a lot of our hospitals and I would like to see them in our doctors' offices and Libraries. It's been very helpful to me, more than any material I've ever read.

Thanks Ed,
Mary Nothstine

• • •

Joe Rodriguez
Arlington, TX
March 9, 1994

Ed Bryant, Editor
Voice of the Diabetic
Columbia, MO

Dear Editor,

Having been recently diagnosed as diabetic, I have read everything that I can get my hands on to combat my problem (your publication being instrumental). I will be instructing other diabetics on the proper method of monitoring accurate, reliable blood sugar tests results. Could you provide current information on this subject? I also request eight copies of the current ***Voice of the Diabetic.***

Thank you in advance for your consideration and please continue your excellent work that has helped so many of us with realistic information.

Respectfully,
Joe Rodriguez

• • •

Robert D. Ritz, LPN
Diabetes Support Group Coordinator
Riverside Hospital
Wilmington, DE
April 28, 1994

Voice of the Diabetic
Columbia, MO

Dear ***Voice:***

I recently received a copy of the ***Voice of the Diabetic*** from our Staff Development Department and was very impressed with it.

At present I teach diabetes to our in-house patient quota and will soon be starting outpatient support group meetings to begin in June.

I would like to receive 100 copies for distribution among our diabetic patients and outpatient support group service.

Thank You,
Robert D. Ritz, LPN

• • •

Clara Storms
St. Louis, MO
April 27, 1994

Gentlemen,

Please send me a subscription to ***Voice of the Diabetic.*** Also, if you have it available, I would like a copy of this paper for Spring Edition, Volume 9, No. 2. It has some good items in it and I hesitated to steal my eye doctor's copy. I will greatly appreciate it if you can send me these.

Thank you,
Clara Storms

(Continued on page 11)

Insulin measurement devices for blind diabetics

(Continued from page 3)

For example, if a diabetic wants 33 units of insulin, depress the lever on the left side three times for three 10-unit increments (30 units) and move the dial on the right side three clicks for three 1-unit increments (3 units). The device measures 9 inches long by 2¼ inches wide. (NOTE: To mix insulins with the Load-Matic, it is necessary to remove and replace insulin vials in the device. This is the biggest difference between the Load-Matic and the Count-a-Dose.)

The Load-Matic has a bracket that securely holds the syringe in place by the barrel and flanges, but the flange notches are difficult to locate. The location of the flange notches is not identified in the instructions. The insulin bottle can be mounted easily on the needle without contamination or damage to the needle. The insulin bottles are inserted into two cylinders that come with the Load-Matic. These cylinders cover the sides of the bottles where many diabetics place Braille labels to identify the type of insulin. I suggest that if you use the Load-Matic, you mark your bottles of insulin on the bottom end of the bottle.

The Load-Matic's cassette instructions provide very little information about tactile landmarks, a serious omission. It would be helpful to know where the flange notches are located, and where the plunger needs to be seated for an accurate dose. The cassette provides sound effects for both the dial and the lever, and these give good audio cues for Load-Matic operation.

The dial on the side, used to measure 1-unit increments, has a tactile system for identifying zero. The dial is serrated everywhere except at zero, where it is smooth. It is difficult for a blind diabetic with neuropathy to distinguish between these surfaces. The raised dot on the flat side of the wheel is a much better indicator of the position of the dial.

The dial sometimes does not operate smoothly, and it is difficult to determine whether it has clicked into position. The dial is moved to a horizontal position to unlock the mechanism, allowing you to operate the lever on the left side of the Load-Matic. This lever measures the 10-unit increments, but must be depressed fully to get 10 units. It is possible to partially depress the lever and mistakenly get less than 10 full units. The Load-Matic is difficult to operate while holding in the hand because of its size and shape. The Load-Matic cannot lay flat on a table because, in the horizontal position, the dial raises one side of the device off the table, making depression of the lever awkward. If you use your thumb to depress the lever and stabilize the device with your other fingers, the moving parts of the gauge can be obstructed by your fingers, blocking the mechanism from moving its full 10 units.

Before you begin to draw insulin, the dial must be locked in vertical position. On the inside of the dial is a notch used to seat the plunger for the correct dose of insulin. This notch is shallow, difficult for a diabetic with neuropathy to find. Because there is so little space between the lever and the dial, it is difficult to pull the plunger back.

The theory for the Palco Load-Matic is great. If it worked as smoothly as I described it, it would be an important addition to the aids available for non-sighted measurement of insulin. The practical application, however, leaves a great deal to be desired. Had the manufacturer consulted with experienced blind diabetics, the device's shortcomings would have been discovered early in its development. When I travel or manage my diabetes at home, I want an insulin measurement device that is small and portable. The Load-Matic is twice the size of a Count-a-Dose, bulkier and not as sturdy. I would recommend the Count-a-Dose or insulin gauges rather than the Palco Load-Matic. The Load-Matic is a good idea, but its design is seriously flawed.

Pen Injection Devices

Novo-Nordisk produces three pen-type devices. The "Novo Pen" is a nickel-plated device that looks like a pen and measures insulin in 1-unit increments. Novo-Nordisk offers "70/30 Prefilled" Novolin disposable syringes. These devices are smaller than a pen injector, hold 150 units of insulin and are packed five syringes to a package; suggested retail price (package of five syringes): $19.10. This is comparable to the cost of cartridge replacements for the Novo Pen. Novo-Nordisk also offers the 2-unit increment "Novolin Pen", which retails at $40 (excluding insulin cartridge), and uses the same replacement nee-

(Continued on page 12)

Ask the Doctor

by Wesley W. Wilson, M.D.

NOTE: If you have any questions for "Ask the Doctor," please send them to the ***Voice*** editorial office. The only questions Dr. Wilson will be able to answer are the ones used in this column.

Wesley Wilson, M.D. is an Internal Medicine practitioner at the Western Montana Clinic in Missoula, Montana. Dr. Wilson was diagnosed with type I diabetes in 1956, during his second year of medical school.

Q: I have learned from the newspaper, television, and talking with my friends that tight control of my diabetes is important to avoid diabetes complications. I take insulin twice daily, try to follow my diet carefully, and check my blood sugars several times a day. How can I improve my blood sugar control?

A: The Diabetes Control and Complications Trial (DCCT), announced in June of 1993, showed that tight control of the blood sugar level significantly reduces the risk of complications, such as kidney failure, nerve conduction problems, and visual injury, in individuals with type I diabetes. The American Diabetes Association has suggested that those same findings apply to type II diabetes, although such has not been demonstrated scientifically. There is good evidence that keeping the blood sugar as near normal as possible reduces the so-called microvascular (or small blood vessel) complications of diabetes, which cause kidney and eye problems, and also that tight control of blood sugar reduces the risk of neuropathy (nerve injury) in persons with type I diabetes. The 1994 American Diabetes Association annual meeting, held this June in New Orleans, was spent discussing how the findings of the DCCT can be used to control complications, and how best to achieve tight diabetic control.

There is risk, however. Attempts to keep blood sugar near normal by increasing insulin injection frequency greatly increase the likelihood of severe hypoglycemia or insulin reactions. In fact, in the DCCT, the group of persons who were in the intensive treatment program had three times the normal frequency of severe hypoglycemic reactions.

There is no standard method of diabetes treatment guaranteeing tight control of blood sugars. Each person requires, to some extent, a different approach. One important element is testing blood sugar at least prior to each meal and at bedtime, recording the values, and then looking them over to see if there is any explanation for unusually high or low readings.

The blood sugar value is used in an effort to improve control. For greatest usefulness, it must be tested regularly, then compared with diet, exercise, or emotional changes to predict how to avoid blood sugar extremes in the future. The tightly controlled group in the DCCT checked blood sugars a minimum of four times a day (before each meal and at bedtime), as well as once a week at 1 or 2 o'clock in the morning. Oftentimes, persons who have not tested blood sugar regularly are shocked when they start doing blood sugar tests on a regular basis before each meal and at bedtime; they find how widely their blood sugars vary from test to test. A person must be aware that wide variations are not always predictable and, unfortunately, sudden excessively high or low blood sugar levels can be harmful. A fact that all folks who take insulin for diabetes know is that **regularity**, in diet (particularly counting carbohydrates in each meal), in exercise, and in mealtime is essential, in order to predict the dose of insulin required to maintain near-normal blood sugar values.

In our society, enthralled with high-tech devices, there is much interest in the insulin pump. Insulin-pump therapy seems to provide good control, particularly as measured by the glycosylated hemoglobin (A1C), which, as you know, gives an estimate of the average blood sugar during the preceding several months. The insulin pump allows a more predictable insulin effect than does depot (injected) insulin. Depot insulin, such as NPH or Lente, deposited under the skin, dissolves and becomes active as it is absorbed into the bloodstream. Unfortunately, depot insulin's erratic absorption, varying as much as 25% in effect from day to day, to some extent explains the variability in blood sugar control. The insulin pump uses only Regular insulin, almost always injected into the subcutaneous tissue of the abdomen, so absorption is more predictable, more nearly duplicating the normal insulin secretion pattern of nondiabetic individuals. But the insulin pump is expensive; it has to be worn all the time; and it requires careful monitoring and blood sugar testing, including tests at least once a week in the middle of the night to determine if the blood sugar dips too low at that time. There is also risk of infection from the implanted needle, which must be replaced every three days. In highly motivated individuals insulin-pump therapy can achieve normal glycosylated hemoglobin, and the avoidance of depot insulin seems to decrease likelihood of insulin reactions, adding a bit more flexibility to mealtimes.

Another intensified treatment program might consist of taking small doses of Regular before each meal, plus some type of longer-acting insulin to provide a constant insulin level — such as using human N or L and R in the morning, a dose of Regular prior to the evening meal, and a small dose of N or L at bedtime. The problems with depot insulin, mentioned earlier, also include variability of absorption with exercise and the fact that once the insulin is in, a person is required to eat on time with less flexibility than that seen with insulin-pump therapy. Managed properly, frequent doses of insulin can provide good blood sugar control.

Another approach is to use animal-source Ultralente insulin (a very-slow-release insulin), plus doses of Regular prior to each meal. This approach, not often used in the United States, can achieve quite good control, and does allow some flexibility in mealtimes. The depot insulin problems persist.

I realize this is a long and complex answer to a simple question. The bottom line is that we do not have a simple answer on how to control blood sugar. We are still waiting for an implantable blood-glucose sensor, which might, through microelectronics, allow automatic adjustment of the insulin dose. The implanted insulin pump still requires blood sugar testing, and needs to be programmed for what dose of insulin should be given at what time.

In conclusion, we now know that tight control of diabetes is important, but is associated with some real risks, and we do not have an ideal way to achieve it. Even the intensively-treated group in the DCCT had glycosylated hemoglobins higher than normal (only 5% of them achieved and maintained a near-normal hemoglobin A1C); but even though control was not ideal, the improvement over taking one or two doses of insulin a day and checking one or two times a day was so great (with a 70% reduction in eye disease, a 70% reduction in kidney disease or progression, and a significant reduction in nerve damage after six and a half years) that effort should be made by all individuals with diabetes to try to tightly control blood sugars. ■

If you or a friend would like to remember the Diabetics Division of the National Federation of the Blind in your will, you can do so by employing the following language:

"I give, devise, and bequeath unto the Diabetics Division of the National Federation of the Blind, 1800 Johnson Street, Baltimore, Maryland 21230, a District of Columbia nonprofit corporation, the sum of $_____" (or "_____ percent of my net estate" or "the following stocks and bonds: _____") to be used for its worthy purposes on behalf of blind persons."

Letters to the Editor

(Continued from page 10)

Mary Ann Egnotovich
HPE Department Chairman
Carbondale Area Jr.-Sr. High School
Carbondale, PA
April 22, 1994

Voice of the Diabetic
National Federation of the Blind
Diabetics Division
Columbia, MO

Ladies and Gentlemen:

Please consider this letter my request that our school be placed on your complimentary mailing list to receive future issues of your publication.

I am a junior-senior high school Health and Physical Education teacher and I believe that your magazine would prove very useful in my classroom. It is important that we encourage our youth to stay abreast of current health developments and I would greatly appreciate the help your publication would provide in pursuit of this goal.

Thank you for your time and attention to this request and I look forward to your response.

Sincerely,
Mary Ann Egnotovich

Dolores Olson
2625 E. Southern Ave. #C-205
Tempe, AZ 85282
June 11, 1994

Hi, Ed,

You are doing a marvelous job reaching so many folks needing information and encouragement. I'm willing to bet your ***Voice*** circulation will reach 100,000 within a year.

Sincerely,
Dolores Olson

(Continued on page 13)

Insulin measurement devices for blind diabetics

(Continued from page 11)

dles and insulin cartridges. According to the manufacturer of the Novo-Nordisk pens and the prefilled Novolin syringes: "None of our devices are recommended for use by blind or visually impaired persons without sighted aid."

The Novolin Pen, Novolin Prefilled syringes, and the Novo Pen are available through Novo Nordisk Pharmaceuticals, Inc.; telephone: 1-800-727-6500. These items may not be available at your local pharmacy, though any pharmacist may order the pens or the Novolin insulin cartridges. Suggested retail price for the Novo Pen is $99. A box of 100 disposable needles for the Novo and Novolin Pens costs approximately $20. Insulin cartridges are available in Regular, NPH or a 70/30 NPH/Regular combination only. A box of five cartridges costs from $15 to $17, each cartridge containing 150 units of insulin. Cartridges of Lente and Ultra-Lente insulin are not available.

There are some characteristics you should consider before purchasing or recommending a Novo Pen, most important is the fact that the Novolin system does *not* allow the user to "custom-mix". Although the Regular, NPH and 70/30 combinations are the most common insulins, your doctor should determine whether or not they are appropriate. Also, if you need Regular and NPH insulin in proportions other than the 70/30 combination, you'll need two Novo Pens, one with Regular insulin and the other with NPH insulin. You must then give two injections, to receive NPH and Regular insulin at the same time.

All of the pen devices require a user to waste insulin when clearing air bubbles from the cartridge and needle. The manufacturers' instructions require the user to hold the pen in a vertical position and depress the ejector until a drop of insulin forms on the needle. A blind diabetic will have to actually squirt insulin onto a hand to establish this. A diabetic with neuropathy may have difficulty with the procedure. This wasteful procedure is also rather unpleasant. Insulin smells terrible, and the odor clings to skin and clothing even after washing. Besides, the amount of insulin expended to clear air from the needle will vary, and can affect the accuracy of the injection.

As pointed out earlier, the price of cartridges for pen devices is about the same as for a bottle of insulin. The difference is in the volume of insulin. Five cartridges contain 750 units of insulin and a bottle of insulin contains 1000 units. The cost of needles for the pens is comparable to the cost of disposable syringes. The biggest problem with pen devices is the availability of replacement pens, insulin cartridges, and needles at your local pharmacy. The Novolin system's pens are less widely used than traditional syringes and vials, though your pharmacist may be willing to carry them if you are willing to purchase them on a regular basis. If you are traveling and your insulin cartridges and/or pen injector are lost, stolen, or damaged, replacements may not be available in all pharmacies, although Novo-Nordisk does have an emergency number, and will ship replacement pens and insulin by overnight express. The number is 1-800-727-6500.

The FDA has required Novo-Nordisk to notify suspension insulin users (NPH and 70/30 type insulins) that they must dispose of a cartridge once it has been in the pen for seven days, whether or not it is empty. Novo-Nordisk specifically instructs the Novolin system user not to refrigerate the pen device even if it has insulin in it. However, it is recommended that all spare cartridges for the Novo Pen be stored in the refrigerator. Designed to be carried in a pocket, the pens are unlikely to be kept in a cool environment. Because the volume of insulin in Novo Pens is small, some diabetes educators believe this insulin is vulnerable when carried for a long period of time in the warm environment next to the body.

All three Novolin system pens, when carried alone, are smaller than syringes and vials of insulin. But carried with extra supplies in a hard-shell carrying case, there is little or no difference between the size of this case and that of a case containing vials of insulin and syringes.

The most important thing for diabetics to evaluate is whether or not the Novolin Pens improve their ability to independently manage their diabetes. Many believe the pen devices are functional, convenient, and are a real step up from the traditional insulin measurement systems. For me, the advantages simply do not outweigh the disadvantages. Despite the efforts of Novo-Nordisk to accommodate people in emergency situations, it is difficult for me to recommend the use of the Novolin system. I think it's important for diabetics to have the insulin and supplies they need available where they live and travel.

Ulster Scientific of New York markets the Autopen (manufactured by Owen Mumford in England) in two versions; a 1-unit increment and 2-unit increment version. These two pen devices use 150-unit Novolin insulin cartridges and needles.

The Autopen advertisements claim this device can be used by individuals with "poor eyesight". The makers of the Autopen should come to the same conclusion as Novo-Nordisk, and not recommend this device for blind diabetics. The Autopen's instructions detail tactile markings that are supposed to facilitate the use of this device by "the visually impaired", but its raised markings are very difficult to find, and the 1-unit and 2-unit increment devices, otherwise identical, are differentiated ONLY by color coded markings. Autopen devices have the same disadvantages for blind people as do the Novolin and Novo pens.

Becton-Dickinson Corporation is working to develop another pen insulin injection system, but, according to a company representative: "It will be at least another year before the item is available."

Simple Insulin Measurement Gauges

Insulin gauges are a very simple concept. On one end of the gauge there is an L-shaped notch. This L-notch will fit on the plastic collar located between the flanges and the plunger of the syringe. In a properly-designed insulin gauge, the L-notch does not rest directly on the flanges. If you use the flanges to seat the L-notch, you'll get a different amount of insulin each time depending on where you place the L-notch on the flange.

Further down the insulin gauge is a small slot where the plunger seats, once you have reached the correct dose for that particular gauge. When making an insulin gauge, keep the slot very narrow. This will insure that when the plunger is seated in the slot there is no play (which would allow a variation in the dose). The L-notch and the slot must both be on the same side of the insulin gauge.

In my contact with other diabetics, I have seen insulin gauges made from all types of materials; popsicle sticks, tongue blade depressors, corner molding, syringe covers, plastic bottle caps, insulin syringe plungers, plungers from other types of syringes, plastic carved from coffee can covers, margarine containers, expired credit cards, etc. Some of these I would not recommend. Insulin gauges made from cardboard are not very durable, and can lose the accuracy of their dose. Insulin gauges made from tape and staples do not hold their form well; staples move around, and the tape stretches and contracts. Commercially produced insulin gauges are expensive, and it is costly for a diabetic to order enough of them to accommodate all possible changes in insulin dosage due to illness or alterations in daily schedule. These gauges are only accurate within 2 units plus or minus of the intended dose, which may not be significant in a larger dose of insulin, but is a potential danger for smaller doses.

The type and size of material used to make an insulin gauge should reflect an individual's physical capabilities. For example, a piece of corner molding would be easier for someone with arthritis to use than would be a small popsicle stick. With information from other diabetics, a blind diabetic can usually come up with a reasonably accurate insulin gauge designed specifically for his or her needs. Be sure to have your gauge made/checked by someone experienced with diabetes.

I have seen some small plastic insulin gauges strung on a large key ring, fitting easily into a pocket. I have also seen a handful of popsicle sticks, marked in Braille, easily slipped into a wallet. Insulin gauges are inexpensive to make, so you can have as many as you need.

A tool I find useful when using insulin gauges is a Hold-Ease, available for $12.75 from Meditec, Inc., 9485 East Orchard Dr., Englewood, CO 80110; telephone: (303) 771-4863. The Hold-Ease is a holder for one bottle of insulin. It has a clip that will hold the syringe in place and guide the needle into the rubber stopper of the bottle without contaminating the needle. This can be used with any brand insulin bottle and any size or brand syringe (Lo-Dose or 1-cc).

If using insulin gauges to measure mixed doses, you must have one insulin gauge which equals the smaller amount of insulin you are taking, and another gauge equal to the *total* amount of insulin you are taking. For example, if you need 6 units of Regular and 18 units of NPH insulin, you must have an insulin gauge for 6 units and a gauge for 24 units. The 24-unit gauge will add the 18 units of NPH insulin to the 6 units of Regular insulin already in the barrel of the syringe, reaching your combined dose of 24 units of insulin.

If you use just one type of insulin, you will need an insulin gauge equal to the dose you are using. For example, if you need 34 units of a single type of insulin, you will need a single insulin gauge that allows your syringe's plunger to move back 34 units.

Insulin gauges, depending on the material used, are small, durable, portable and inexpensive. They can be made in quantities to allow for dose changes and gauge replacement. They can easily be marked in Braille. There is a minor disadvantage to using insulin gauges as opposed to the Count-a-Dose. A blind diabetic will require an insulin gauge for each different dose of insulin. However, insulin gauges are inexpensive to make, so you can have as many as you need. It is important to understand that these gauges are cut for a specific brand and size of syringe. Therefore, an insulin gauge that has been cut for a Monoject syringe cannot be used on a B-D syringe and an insulin gauge cut for a 1cc B-D syringe cannot be used on the 1/2cc (Lo-Dose) or 30-unit B-D syringe.

The Diabetics Division of the National Federation of the Blind is a support and information network for all diabetics. Our members are more than willing to share their expertise in non-sighted techniques of diabetes self-management. If you have any questions about diabetes and blindness, feel free to contact us. ■

Adjusting insulin

(Continued from page 4)

blood glucose reaction and the pre-supper values are normal to low.

Insulin adjustment can obviously be an increase or a decrease in the appropriate insulin. First, let's consider increases in insulin. You may increase your insulin if you establish a pattern of high blood glucose, if you plan to eat more during sick days or if you will decrease your exercise. In all cases, you should increase your insulin only with your doctor's knowledge and permission.

If you establish a pattern of high blood glucose values, such as the pre-lunch values of Table III, you may want to increase your insulin dose. You need to determine which insulin to change and how much to change it. To determine which insulin to change use Figure 1 and Table II. From either you can see that the pre-lunch SBGM (shaded lightly) corresponds to the Morning Regular. Therefore, you want to increase that insulin. Deciding how much to increase the insulin is harder. Remember, you can adjust insulin often, every three days if necessary, so you can go slowly. You don't want to increase the insulin too much and cause a low blood glucose reaction. As a rough rule of thumb, to lower the blood glucose by 50 mg/dl, people with Insulin-dependent diabetes should increase their insulin by 1 unit and people with Non-insulin-dependent diabetes should increase it by 2 units. Once you have changed your insulin, you must be careful to continue to check your blood glucose to make sure that you have not increased the insulin too much.

It is difficult to adjust insulin for changes in food intake when using conventional insulin therapy. It is much easier to do this with intensive insulin therapy. There are some guidelines that you can use. Again you have to know which insulin corresponds to which meal or snack. This is summarized in Table IV.

How much you should increase your insulin is very variable and you will have to determine this by trial and error. As a rough rule of thumb, for one additional bread or fruit exchange, people with IDDM need 2 units of insulin and people with NIDDM need 2-3 units of insulin.

You should decrease your insulin if you have an unexplained low blood glucose (<50 mg/dl). Most low blood glucose can be readily explained as being due to too little food, too much exercise or too much insulin. A few low blood glucose reactions are unexplained and may pose a problem. If you have a significant unexplained low blood glucose reaction, you should reduce your insulin. The exact amount will vary in different people. As a first guess, the reduction should be 2 units or 10% of your insulin, whichever is more. If this reduction is too much, you can increase the insulin in three days when you establish a pattern of blood glucose again. If you know why you had the reaction and plan to overcome this problem, you may not have to reduce your insulin.

In general, when people with diabetes exercise, they require less insulin for good control. This is due both to a more rapid absorption of insulin from exercised sites and an increase in the effectiveness of the insulin. You must, therefore, reduce your insulin when you exercise, but there are few guidelines to help you. Some people only need to reduce their insulin a little, some need only half as much.

Exercise should generally be mild to moderate and aerobic. Resistance exercise such as moderate weights are fine, but you should avoid *power* exercises like competitive weight lifting. You should try to exercise at the same time each day.

When you exercise determine which insulin you should change. Table V shows which insulin corresponds to which exercise time. For mild exercise like walking or bike riding most people will only need to reduce their insulin by 1-2 units. Some people with diabetes will need to reduce their dose signiticantly more. For more severe exercise the reduction of insulin dose must be significantly more. If in doubt decrease the dose by a larger amount. If your next blood glucose is too high, you can always decrease the dose less next time. Dr. Bob Arnot has written an excellent free pamphlet on exercise in diabetes that is available. You can obtain your copy by calling (800) 237-4554.

Table V
Relationship of Exercise to Insulin Adjustment

Time of Exercise	*Insulin to Adjust*	*Shade*
6-11 AM	Morning Regular	
11 AM to 4 PM	Morning NPH	
5-8 PM	Evening Regular	
8-11 PM	Evening NPH	

Table IV
Relationship of Meals to Insulin Adjustment

Meal	*Insulin to Adjust*	*Shade*
Breakfast	Morning Regular	
Morning Snack	Morning NPH	
Lunch	Morning NPH	
Afternoon Snack	Morning NPH	
Supper	Evening Regular	
Bedtime Snack	Evening NPH	

If you do prolonged, strenuous exercise, the increased effectiveness of insulin may last longer than the exercise. This can be a serious problem and one that you should discuss with your doctor.

By learning to adjust your own insulin, you gain control over your life. You are able to eat "healthy," exercise properly and perform most activities, and still maintain a normal blood glucose. You can live a near-normal life and still help avoid the complications of diabetes.. ■

Board Members

The Diabetics Division of the National Federation of the Blind.

Ed Bryant, President, 811 Cherry Street, Suite 309, Columbia, MO 65201; Phone: (314) 875-8911

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Tom Ley, Secretary, 2514 Deas St., Bossier City, LA 71111; Phone: (318) 746-0356

What type of diabetes do you have?

(Continued from page 9)

with birth defects.

When diagnosed with gestational diabetes, a woman will require intensive diabetes management which includes insulin injections, frequent blood glucose monitoring and a strict diet.

A woman who has had gestational diabetes is at risk for developing type II diabetes in the future.

Checkups Important

Not only can your diabetes change over the years, so can your lifestyle and your body. Because of these changes, the diabetes management plan you started with when you were first diagnosed may also change. The things you did to control your blood glucose years ago (or just months ago) may not work for you today. That's why it's so important to get regular checkups from your diabetes doctor.

Your doctor can evaluate the current status of your diabetes and the efficiency of your prescribed management program.

If adjustments are needed to accommodate your changing diabetes, your doctor can specify what changes should be made.

(Note: Reprinted with permission of *Diabetes in the News,* published by Miles Inc., Diagnostics Division.). ■

Letters to the Editor

(Continued from page 11)

Sharon Davids, Ed.D., R.N.
Diabetes Education
Phoenix Baptist Hospital
April 21, 1994

Ed Bryant, Editor
Voice of the Diabetic
Columbia, MO

Dear Mr. Bryant:

We are starting a new diabetes program and I would like to make the *Voice* part of our information pack for our patients. It always has such useful information.

I would like 25 copies a quarter. Thank you.

Sincerely,
Sharon Davids, Ed.D., R.N.
Diabetes Education

• • •

Bob Siemsen
Sleepy Valley Ranch
Mission, TX
February 25, 1994

I would like to receive the free copies of ***Voice of the Diabetic***. I understand they are printed four times a year. I am 70 years old and an insulin-dependent diabetic with renal failure. I read your magazine at my doctor's office and found it very informative.

Thanks,
Bob Siemsen ■

Insulin vial configurations: Movement toward solution

by Ed Bryant

Ed Bryant, President of the Diabetics Division of the National Federation of the Blind, works toward a change in insulin vial shape.

In the **Voice,** *Volume 7 No. 3, I first wrote about the need to package insulin in different-shaped vials to aid non-sighted differentiation between types. Since that time (April 1992) I have been in contact with both the Food and Drug Administration and the two manufacturers of insulin sold in the U.S., Eli Lilly and Novo Nordisk.*

Change comes slowly. My first efforts were directed toward the manufacturers, whose replies were noncommittal. The FDA was more forthcoming. A representative from Dr. David Kessler, Commissioner of the FDA, wrote to me in June, 1992, outlining the regulatory problems of such a change in insulin packaging, and what the industry, consumers, and the Diabetics Division of the National Federation of the Blind could do about it. He asked for specific suggestions on tactile marking of insulin vials. His letter, and my carefully researched reply, dated November, 1992, were published in the **Voice,** *Volume 8, No. 1.*

Since those publications, I have received a great deal of comment and correspondence on this matter. Consensus is overwhelming — vial shapes need to be changed!

Since that time, ***Voice of the Diabetic*** *readers have continued to make their views on this issue known to the insulin industry and the FDA. Meanwhile,* ***Voice*** *readership has doubled, and thus our power to get things done. It was time to address the insulin vial issue again.*

The letter published below was sent to the chief executives of both Eli Lilly and Novo Nordisk. (For clarity, both addresses are supplied here.) A copy was sent to Dr. Kessler, at the FDA. It, and their responses (or lack of same), represent the current state of this matter. Novo Nordisk's failure to make any response at all still astonishes me. I simply hope they do not treat all their customers as badly ...

Diabetics Division
National Federation of the Blind
Columbia, MO
April 28, 1994

Randall L. Tobias
Chairman of the Board, and
Chief Executive Officer
Eli Lilly and Company
Indianapolis, IN

C. Henk Bleeker
President
Novo Nordisk Pharmaceuticals, Inc.
Princeton, NJ

Dear Mr. Tobias:

As president of the Diabetics Division of the National Federation of the Blind (NFB), and editor of the Division's news magazine ***Voice of the Diabetic,*** I would like to discuss with you an issue of great concern to blind diabetics and those losing vision. Centers for Disease Control (CDC) statistics for 1994 estimate 650,000 new cases of diabetes per year, with 15,000 to 39,000 individuals each year becoming blind as a result of diabetes. With an estimated 14 million diabetics in America, it is no small issue.

As you know, Food and Drug Administration Regulations (21 CFR Part 429) currently require all insulins to be packaged in the same cylindrical vials. Anyone who mixes insulins (a common practice) is forced to rely either on such impermanent cues as rubber bands and strips of tape to differentiate vials, or on being able to read the label. There are too many blind diabetics drawing their own insulins for this discriminatory situation to go unrectified. Incorporation of specific, standardized, nonvisual cues into insulin vial packaging would have little financial impact, but could greatly reduce the chance of insulin dosage error.

Objections to such insulin vial modifications, upon close examination, appear without merit. These objections break into three groups: difficulty with FDA regulations, cost of modifications, and organizational inertia. The first excuse, "Blame the FDA, not us," was rebutted by Howard S. Spungen, Consumer Safety Officer, Product Surveillance Branch, Food and Drug Administration, who wrote to me on June 25, 1992, stating:

> "It may be possible to provide tactile recognition of insulin by voluntary agreement with the manufacturers **prior to amending the regulations** [emphasis mine]. If so, the tactile features could be codified in the regulations at a later date as requirements.
>
> We are interested in your suggestions and would appreciate further discussion on the best way to address your concerns. Among other things, we want to consider **not only different vial shapes** [emphasis mine] to make the products distinguishable by the blind or visually impaired, but also alternatives that may accomplish the same purpose. Using tactile features, such as raised bumps, on labels, has been suggested. If a tactile feature is used on labels, what coding method should be used, Braille or another system? And should the labels be used on all vials, or only by special request?"

The second excuse, prohibitively high cost, was rejected by Mr. William Gierke, Manager of Pharmaceutical Package Engineering, Eli Lilly and Company, who phoned me on May 6, 1992, and stated:

> "As much insulin as we make, [cost of] the molding would perhaps be up front quite a bit. But per product it would probably round off. I don't really think the extra cost would be a factor."

The third excuse, simple organizational inertia, can best be answered by the following letter, which Mrs. Ruby Thielke, of Hopkins, Minnesota, sent to Dr. David Kessler, the Commissioner of the Food and Drug Administration, on September 14, 1992:

> "We are the parents of one of the diabetics who almost lost his life because he accidentally got the bottles mixed up and took an overdose of the fast-acting kind of insulin. He is a businessman and of sound mind. It was very early in the morning, [he was] getting ready for work and experiencing a slight reaction, and he got the bottles mixed up. Had they been shaped differently somehow, to distinguish the two different types [that he takes], he might have avoided the horrible convulsions. Had it not been for the quick action of his wife calling 911, he might not be with us today. We're asking you to consider a packaging change in insulin bottles. By the way our son is not blind.
>
> A life is more valuable than the extra cost of a production change. With the volume of insulin produced, this shouldn't be a problem. [I] can't understand why this hasn't been done a long time ago."

Mrs. Thielke brings up an important point. Diabetics, sighted or blind, can become disoriented while having an insulin reaction. (I know this from personal experience — it has happened to me.) This mother knows that a tactile marking system might have spared her sighted diabetic son the serious consequences he faced. Tactile markings are not just for the blind.

Not so very long ago, insulin manufacturers DID package insulins of different duration in bottles of different shape. At that time, the Code of Federal Regulations (CFR) allowed such differentiation, as stated in the following:

> "... cross-section of the containers for isophane insulin suspension containing less than 100 U.S.P. Units of insulin per milliliter shall be a rounded square, and the shoulder of the containers for insulin zinc suspension, prompt insulin zinc suspension, or extended insulin zinc suspension containing less than 100 U.S.P. Units of insulin per milliliter shall be hexagonal."

According to William Gierke of Lilly (as cited above), the FDA stepped in and enforced standardization in packaging because of the confusion of too many colors. Tactile markings on insulin vial caps were also tried in the past, but the insulin industry's failure to standardize markings led to FDA disapproval. As Mrs. Mildred Friedman, President of the Diabetic Renal Transplant Self-Help Group, who has been in communication with your office regarding this matter, states:

> "... there are only two manufacturers of insulin in the United States. The possibility of cooperation [in developing an industry-wide standard for nonvisual marking of insulin containers] between two pharmaceutical houses does not seem to me remote."

What Will Not Work:

Braille won't work. Many diabetics, blind and sighted, suffer the diminished tactile sensations of neuropathy. Because of their diabetes, they simply cannot distinguish individual Braille markings. Braille would help some, but those individuals needing it the most would be able to use it the least. And Braille literacy is by no means universal among the blind.

Ms. Janet Lee, Diabetic Education Coordinator for the Independent Management for Blind Diabetics program at Blindness: Learning In New Dimensions, Inc., and First Vice President of the Diabetics Division of the NFB, herself blind from diabetes, in a July 29, 1992 letter to me, stated:

> "Braille is not a good option. There are simply too many blind diabetics who are tactually very impaired by neuropathy to make this a reasonable system ... Many of us look back on the days when bottles were different shapes to indicate types of insulin and wish it were so again. Those kinds of firm, standard tactile cues are good ones even for those individuals with very severe neuropathy. Skip the color on the labels. Skip the Braille or non-Braille dot system on vials or labels ..."

Colored labels won't work. Although color-coded labels might reduce pharmacist error, of what use is color differentiation to someone who cannot see the colors? A diabetic losing vision might go through a peri-

od of colorblindness. Many individuals are colorblind from other causes. Vast numbers, with impaired vision, are unable to reliably distinguish between colors. Worse, many diabetics experience fluctuating vision, unpredictable periods of degeneration and improvement in their sight. A mistake in the reading of visual insulin cues could be fatal.

Modifications to insulin vial caps alone won't work. Although, according to the FDA, the shape of the metal band that holds the stopper in the insulin bottle is exempt from the CFR, and changes to its shape would have immediate approval, the band is too small to encode sufficient information to guarantee reliable non-visual identification of contents. The amount of area available for encoding is a strip 45 mm long and 5 mm high. Any more than the most minimal tactile use of this space would meet with the same objections as Braille (above). Changes to cap shape **CAN** convey useful information. When used in conjunction with a system of bottle embossing, clear tactile cues on labels, and/or modifications to insulin vial shape, such a system would have merit. The caps are simply too small to carry all the needed information alone.

Special labels supplied upon request will not work. LABELS SHOULD BE USED ON ALL VIALS. I imagine specially marked labels would be outrageous in price. In my contact with thousands of insulin-dependent diabetics, both blind and those losing vision, I find the vast majority are independent, and do not want, or need, to order "special request" labels on their insulin vials. Furthermore, my whole proposal is in regard to a universal system that would eradicate dosing and dispensing errors along with the need for special request labels.

What Will Work:

In the past, some insulin was packaged in containers having a square cross-section (shoulder), and some with hexagonal shoulders. Although the concentration so regulated is no longer manufactured, this federal regulation still exists, which means the FDA considers it safe for insulin to be packaged in containers with a round, square, or hexagonal top cross-section. Bold, clear, permanent tactile cues of sufficient size will work.

Jordan Medical Enterprises, of Garden Grove, California, has had great success with their Count-A-Dose insulin measuring gauge. The device employs a number of readily apparent nonvisual cues and landmarks, and is designed to allow reliable insulin mixing and measurement without sight. I recommend it for your inspection. I have enclosed the insulin vial holder ("t-bar") from this product, so you may inspect its markings. All the Count-A-Dose user lacks is sufficient tactile means to distinguish insulin types by touch.

One hundred years ago, pharmaceutical bottles, like most bottles of the time, incorporated bas-relief embossing to label contents. Letters and shapes were far bigger than Braille, easy to distinguish by touch, and of course permanent. Archaeologist Peter Nebergall, PhD, reports that labeled bottles, fragmentary and complete, are common on 19th century sites. Glass embossing, bas-relief (raised letters) will work.

Embossing on the label, if of sufficient size, could carry enough information. Fishburne Enterprises, of Hemet, California, markets the "Fishburne Alphabet," a set of symbols embossed into sheets of vacuum-formed plastic, designed expressly for blind persons with diminished tactile sensation (such as diabetic neuropathy). A sample is enclosed. Insulin vial labels embossed in the same manner will work.

A System:

To help determine what kind of insulin marking system would best meet the needs of blind and visually impaired diabetics, I conducted an informal survey, which I sent to people all over the country. Nineteen percent of the respondents were sighted, 81 percent were blind, and 87 percent of the respondents were diabetic. Nineteen percent were rehabilitation professionals, both blind and sighted, who work with blind diabetics.

The survey elicited the following responses: Ninety-four percent of the respondents felt a change of some sort was needed. Fifty-six percent preferred a change in vial shape; 38 percent preferred the addition of tactile markings. Of those preferring tactile markings, most did not specify their preference regarding marking location on vial or label. Twenty-nine percent indicated they would like a combination of distinguishing vial shapes and tactile markings. Regarding the use of colored labels, 94 percent gave negative replies or failed to reply at all. Only six percent of respondents indicated preference for use of colored labels. I believe these figures provide ample evidence that most diabetics responding to the survey would prefer to be able to distinguish different kinds of insulin by touch.

After reviewing many suggestions supplied by survey participants, I've determined that a combination would satisfy the needs of the majority. The combination would consist of specially shaped vial shoulders to distinguish the DURATION of insulin (short-acting, intermediate-acting, or long-acting), AND tactile cues on the bottle and/or label to identify the SOURCE of the insulin.

Regarding the shape of tactile cues that might be used on vials or labels, I suggest the following: ROUND, SQUARE, RECTANGLE, TRIANGLE, and COMBINATIONS. The following chart shows SOURCES and suggested respective tactile cues.

SOURCE OF INSULIN:	*TACTILE CUE(S)*
Human	ONE ROUND tactile cue
Human Semi-synthetic	TWO ROUND tactile cues
Purified Pork	ONE SQUARE
Pork	ONE LONG RECTANGLE (vertical or horizontal)
Beef/Pork	TRIANGLE and LONG RECTANGLE
Beef	ONE TRIANGLE

I propose that short-acting insulins be packaged, as they are now, in cylindrically shaped containers; that intermediate-acting insulins be packaged in cylindrically shaped containers with cross-sections (shoulders) of rounded square shape; and that all long-acting insulins be packaged in cylindrically shaped containers with hexagonal shoulders. This reflects FDA-approved package modality widely used by insulin manufacturers years ago. Such packaging would enable ALL persons to readily distinguish between different insulins, based on the general categories of duration. The new "quick-acting" insulins under development at Eli Lilly could easily be incorporated into this system.

If vial shoulders indicate DURATION, and tactile markings on containers or labels indicate SOURCE, six different tactile cues would be necessary for the six sources of all insulin. All six cues would be used under the short-acting category of DURATION. Four cues would be used to indicate source under the intermediate-acting category, and two cues would be necessary under the long-acting category. A possible fourth category of duration could be "Fixed Combinations," as used in an insulin pen. That category would require three cues.

There are alternatives. DURATION, the first priority in any system, could be indicated by differing vial shape. The different vial shapes could be combined with raised letters (R, N, L, etc.) or other tactile cues to indicate source. Any kind of tactile indications must be simple and easy to determine, in order to minimize errors. Consumer confusion will not occur if markings are simple.

To reiterate, thousands of diabetics are concerned with this issue, and are looking forward to being able to reliably determine what insulin they are using, once the above changes become a reality. The new emphasis on "tight" control, as detailed by the recently completed Diabetes Control and Complications Trial, will translate into a rise in injection frequency, with still more opportunities for insulin misidentification and severe consequences. We NEED these changes, in the interest of patient safety.

As I did several years ago when Diabetics Division member Ken Carstens, of Virginia, Minnesota, first brought the above to my attention, I intend to publish this letter, and your response, in the ***Voice of the Diabetic,*** current circulation more than 94,000. The ***Voice*** reaches more than 13,000 health professionals, all diabetes treatment centers in the U.S., all rehabilitation centers for the blind, hundreds of radio stations across the U.S., and thousands of diabetics, both blind and sighted. Leaders of the Diabetics Division place copies of the ***Voice*** in places of public patronage all across the U.S., and we have subscribers in many foreign countries. As ***Voice*** editor, I exchange copies with all other publications dealing with diabetes issues in the U.S., and I will grant reprint permission to any of them.

More than two years ago, when I began investigating tactile marking of insulin vials, insulin industry executives indicated to me that changes such as I have described "were being considered" — but I have seen neither progress nor willingness to move forward. How much longer must blind diabetics wait? Surely insulin-dependent diabetics deserve to know what the industry upon which they must depend is planning for their welfare. Although the FDA has indicated interest and willingness, there has been no apparent movement from the manufacturers. If such measures as I have described are truly under consideration, please let me know.

The Diabetics Division of the National Federation of the Blind includes thousands of blind diabetics who live independently and measure their own insulins. We have many blind individuals, both instructors and lay people, ready and willing to help you develop practical systems of non-sighted insulin marking. Our lives depend on the good judgment we bring to diabetes self-management. We are ready to offer you the same.

To expedite changes such as I have described, formal application to alter the regulations must come from the insulin manufacturers, who will have to agree to standardize markings. Once you request a specific amendment to the relevant section of the CFR, Health and Human Services will commence regulatory review, as will the Office of Management and Budget. The FDA has indicated that exemption is possible pending completion of this regulation review process. **NO GOOD IS BEING SERVED BY FURTHER DELAY.**

I and members of the Diabetics Division stand ready to assist you. Please feel free to contact me if you have any questions. Thank you in advance for your response.

(Continued on page 16)

Insulin vial configurations: Movement toward solution

(Continued from page 15)

Sincerely,
Ed Bryant, President
Diabetics Division
National Federation of the Blind
Enc.: Count-A-Dose T-Bar
Fishbume sample
cc: Dr. David Kessler,
Commissioner
Food and Drug Administration

• • •

Eli Lilly's response was prompt. Within several days, Mr. Michael Querry, Diabetes Care Business Planning Associate, had contacted me by phone, to set up a meeting (described below). Shortly after his call, I received the following communication:

Larry Ellingson, Executive Director
Global Diabetes Care Planning
Eli Lilly and Company
Indianapolis, IN
May 27, 1994

Ed Bryant, President
Diabetics Division
National Federation of the Blind
Columbia, MO

Dear Mr. Bryant:

Your recent letter to Randy Tobias, Chairman of the Board and CEO, was forwarded to me for response. I appreciate your willingness to share your ideas with us.

During the past year, Eli Lilly has discussed with the FDA a proposal for worldwide standardization for color coding of insulin formulations as well as identifying marks to better recognize formulations. We have a meeting planned with the World Health Organization, International Diabetes Foundation, European Association for the Study of Diabetes, American Diabetes Association, FDA, manufacturers of insulin formulations, and syringe manufacturers to discuss these proposed guidelines for implementation on a worldwide basis.

We will also discuss tactile recognition methods to ensure better identification for visual-impaired individuals. If we can get agreement, the insulin and syringe manufacturers are prepared to move forward following this meeting.

While it seems as if it has taken a long time — and it has — we are beginning to make some progress and show signs of implementing some of your recommendations. Should you have additional questions about our progress, please feel free to call me at 317-276-3204.

Sincerely,
Larry Ellingson
cc: Mr. R. Tobias

• • •

When I sent my letters to the CEO's of Lilly and Novo Nordisk, copies of all correspondence were supplied to the FDA. As my previous contact, Howard Spungen, had not replied to my most recent queries, the following was sent to Dr. David Kessler, Commissioner of the FDA.

Diabetics Division
National Federation of the Blind
Columbia, MO 65201
June 6, 1994

Dr. David A. Kessler, Commissioner
Food and Drug Administration
5600 Fishers Lane
Rockville, MD 20857

Dear Commissioner Kessler:

Over the past several years, the Diabetics Division of the National Federation of the Blind has been working to rationalize insulin packaging, to better serve the needs of insulin-using diabetics. Since early 1992, I and members of my organization have been in contact with your office, and with the CEO's of Eli Lilly and Novo Nordisk, the manufacturers of all insulin sold on the US market.

On April 28 of this year, I contacted both Eli Lilly and Novo Nordisk, and on May 2, I sent copies, with a cover letter, to Mr. Howard S. Spungen, Consumer Safety Officer, FDA. Your office received copies of all correspondence.

As of this date, Novo Nordisk has failed to respond. Your organization has also been silent. Eli Lilly's reply (enclosed) speaks of a "proposal for worldwide standardization for color coding of insulin formulations," and a meeting of industrial and health care professional organizations (WHO, FDA, ADA, International Diabetes Foundation, European Association for the Study of Diabetes, Lilly, Novo Nordisk ...) to discuss such proposal. Significantly, NO consumer organization appears on the list. Why is that?

We, the Diabetics Division of the National Federation of the Blind, are the largest group dealing with blindness and diabetes. Not doctors, industrialists, or bureaucrats speaking FOR diabetics, we are diabetics speaking for ourselves. We are those who must USE insulin. We have a great deal to offer the decision-making process. Our news magazine, ***Voice of the Diabetic,*** now reaches more than 99,000 people, in all U.S. states and territories, and 20 foreign countries. Can you provide one good reason why we have not been invited to the above meeting?

In my experience, products and policies established for blind diabetics, without input FROM blind diabetics, are at best expensive exercises in irrelevance, and all too often make matters worse. This plan to color-code insulin labels to help the BLIND is surely one such example! Please ask US. We USE insulin.

As I haven't heard from Mr. Spungen, I'd appreciate hearing from you. As detailed in my previous correspondence, the problem of insulin vial misidentification by blind and visually-impaired diabetics deserves serious attention and positive action. Members of our organization have years of experience dealing with this issue. We are at your disposal.

Sincerely
Ed Bryant, President
Diabetics Division
National Federation of the Blind

• • •

On June 12, 1994, at the Annual Meeting of the American Diabetes Association, in New Orleans, I met with Mr. Michael Querry, who had contacted me from the business office of Eli Lilly and Company. Mr. Querry informed me that Lilly is exploring many options, one of them being insulin vial caps of different shapes and colors. He agreed with me that blind, insulin-using diabetics should evaluate any tactile-marking system before it is placed into production, and he promised that Eli Lilly would work with the Diabetics Division of the National Federation of the Blind.

*When he told me that Lilly is looking to achieve a world standardization of insulin packaging, I reminded him of the recent (and in parts of the world **unfinished**) struggle to get U100-strength insulin accepted as a standard. Instead of putting that process on the international bargaining table, the insulin industry made the U.S. market an example — and the rest of the world is gradually falling into line. I suggested that Lilly do it again — develop state-of-the-art tactile packaging, for the American market — and let the enormous influence of U.S. medicine carry the message to the rest of the world.*

On June 21 and 22, I spoke with Mr. John Short, Consumer Safety Officer, Division of Metabolic and Endocrine Drug Products, Food ano Drug administration, Rockville, Maryland. HE informed me that "the decision has been made," that because "someone who was totally blind would have someone else taking care of medication for them," that to take the needs of the blind into account would be pointless, a scheme to color-code insulins was about to be submitted for public comment!

*According to Mr. Short, he had met with representatives from the insulin industry several months before, to work out this latest initiative. No consumer groups were involved in the fact-finding process, and from his statements about blind folks, not a great many facts were found, either. Kenneth Jernigan, Present Emeritus of the National Federation of the Blind, writes in **If Blindness Comes:** "Loss of sight need not be a tragedy, but it can be — and probably will unless correct information is available."*

*This time, the FDA clearly didn't do their homework. They need to reopen the fact-finding process, and their policymakers need to shed their antiquated, insupportable, false, and discriminatory notions about the abilities of blind people. The time when disabled people were chained to the bed is long since over. **Blindness is not synonymous with inability!***

Novo Nordisk's total silence is hard to figure. A drug company depends on money from its customers. Are they THAT unconcerned? What don't they get?

They are hardly unaware of the issue. Their U.S. office received the letter published above May 2, three days before Eli Lilly received theirs. On June 11, 1994, Patrick M. Quinn, MD, Novo Nordisk's Director of Medical Marketing, happened on the Diabetics Division's booth at the ADA convention in New Orleans. There he told me he had just attended a meeting, between his company, Eli Lilly, the FDA, and others, where insulin packaging reform was discussed. Yet, Novo Nordisk seems unwilling to address blind diabetics directly. They're ready to think FOR us, but not to ASK us. This must change.

*If you are an insulin-dependent diabetic, and have any input on this matter, please make your thoughts known to FDA Commissioner Kessler (at the above address), and please send me a copy at the **Voice** office.*

*This project will continue until the insulin industry and the FDA make the necessary changes. **Voice of the Diabetic** will keep you abreast of the latest developments.* ■

What you always wanted to know but didn't know where to ask

(Resource list)

Inclusion of materials in this publication is for information only and does not imply endorsement by The Diabetics Division of the NFB.

Diabetes TV Show

"Living With Diabetes" airs every Sunday at 2:00 p.m. EST on CNBC cable. Show host Pat Gallagher defines it as a "patient show ... about empowerment, education and support." A diabetic for more than 20 years, Pat brings a positive attitude and the latest information to his program of interviews with diabetics and health professionals. Call 1-800-762-7888 for the cable TV channel in your area.

Now on Tape

Judy Curtis' unique and useful book: *Living With Diabetic Complications* (reviewed in the ***Voice,*** Vol. 8, No. 2) is now available on audiocassette. This title can be obtained through your regional library for the blind and physically handicapped. Ask for it by catalog number: RC36956. For further information, contact the National Library Service for the Blind and Physically Handicapped; telephone: 1-800-424-8567.

Generic Test Strips

Can-Am Care Corporation manufactures many discount-priced diabetes supplies, including Dex4 glucose tablets, E-ZJect lancets, and the Quick Check line of generic test strips. Its test strip lineup now includes those for the LifeScan One Touch blood glucose monitor. For further information, or to receive their "Questions and Answers" pamphlet, contact Can-Am Care Corporation, Cimetra Industrial Park, Box 98, Chazy, NY 12921-0098; telephone: 1-800-461-7448.

Discount Test Strips

Polymer Technology International manufactures the First Choice line of alternative blood glucose monitor test strips. First Choice strips are available for use with Glucometer II, Glucometer 3, Diascan, and One Touch blood glucometers, at a substantial savings over manufacturer-distributed test strips.

For further information contact: Polymer Technology International, 1871 NW Gilman Blvd., Issaquah, WA 98027; telephone: 1-800-877-2343.

Medical Supplies

Liberty Medical Supply provides diabetes self-management supplies by mail, and direct billing of insurance providers. Liberty is a Medicare Participating Provider, and thus accepts direct assignment, also billing Medicare Supplements and major medical insurance plans on behalf of customers. As well as the routine testing supplies like strips and lancets, they stock blood glucose monitors, insulin measuring devices and needle guides, diabetes supplies carrying cases, more than 100 items.

Liberty Medical Supply services can now be heard on audiocassette tape. To order your free cassette, or for further information about the program, contact: Liberty Medical Supply, PO Box 1966, 3595 S.W. Corporate Parkway, Palm City, FL 34990-6966; telephone: 1-800-762-8026.

Book Review

The Human Side of Diabetes, by Mike Raymond: Professor of English Mike Raymond is not the first to write of the diabetes experience from the first person, but his perspective is unique. Not a self-care manual, *The Human Side of Diabetes: Beyond Doctors, Diets and Drugs* is a series of short introspective essays addressing the various emotional and psychological aspects of living with the condition. The author combines aspects of coping with advice based on personal experience. Several of the 70 essays were written by friends, family members, or members of the author's health care team.

Mike Raymond puts no varnish on the truth. His blunt descriptions of his insulin reactions, his denial system, and the insensitivity of others lend a gritty reality to his text. He states: "The first and most crucial step I took in coming to terms with diabetes was when I finally admitted that I was a human being and that diabetes did not define me, identify me, or diminish my humanness. It was then that I had finally given myself the permission to live."

The Human Side of Diabetes stresses positive attitude, individual empowerment, and peer support. It is a wonderful antidote to the well-meaning fear-mongering inflicted on so many diabetics. Its encouragement of free will and rejection of "labeling" offer much toward successful self-management, not just of the *disease,* but of the diabetic's entire life. The book should be useful for almost all diabetics.

The Human Side of Diabetes is available in paper at a price of $13.95 plus $3 shipping, from The Noble Press, 213 W. Institute Place, Suite 508, Chicago, IL 60610; telephone: (312) 642-1168. ■

Ann Terry is a registered dietitian who works at the State Hospital in Fulton, Missouri, and at the Veterans Administration Hospital of Columbia, Missouri. She graciously calculates the diabetic exchanges and food values for our recipes.

Send your great ideas to the editor. He is the official taste tester and needs recipes to test his taster.

Low-Cholesterol Low-Fat Meat Loaf

from Gail Bryant
of Columbia, MO

3/4 lbs. ground round
3/4 lbs. ground turkey
1/2 cup regular oats
one 8-oz. can tomato puree
1/4 cup chopped onion
(approx. 1 small)
2 tbsp. chopped fresh parsley
1/2 tsp. Italian seasoning
1/2 tsp. salt (optional)
1/2 tsp. regular black or lemon pepper
(lemon preferred)
one clove finely chopped garlic

Heat oven to 350 degrees. Mix all ingredients well. Press mixture evenly into an ungreased loaf pan or use a 9 by 13 inch pan and shape into loaf. Cook uncovered, 1¼ to 1½ hours or until center is no longer pink. Great with salad and steamed vegetables.

Yield: Eight servings; Calories: 200; Diabetic Exchanges: 2½ meat.

Low-Fat Low-Calorie Slaw Dressing

from Gail Bryant
of Columbia, MO

1/2 cup white vinegar
1 tsp. salt
3/4 tsp. dry mustard
one package sugar substitute
3/4 tsp. chili powder
1/3 tsp. garlic powder
1/4 tsp. black pepper
Dash red pepper

Mix all ingredients. Pour over large bowl of grated slaw greens. Allow to marinate at least eight hours.

Serving size: 1/2 cup; Diabetic Exchanges: Free for 1/2 cup.

Cherry Fluff

from Anonymous

(NOTE: We do not know where this recipe came from. But, it sure sounds good.)

2 tbsp. frozen apple juice concentrate
1 box (4 servings) sugar-free
cherry gelatin
1/2 cup boiling water
8 oz. non-fat plain yogurt
16-oz. can water packed dark
cherries, drained
1/2 tsp. vanilla

Dissolve gelatin in boiling water and cool slightly. Add all ingredients to blender and whirl for 30 to 45 seconds or until smooth. Serve in fancy dessert glasses.

Yield: five servings; Calories: 60; Diabetic Exchanges: one fruit.

For a slightly different twist:

Prepare a box of sugar-free chocolate fudge pudding with 1½ cups cold skim milk. Pour evenly into the bottom of eight fancy desert glasses and top with the above cherry fluff. It will taste like chocolate covered cherries, and is still allowed in your meal plan.

Yield: 4 servings; Calories: 100; Diabetic Exchanges: one fruit, 1/2 starch. ■

Voice Distributors Needed

Since the ***Voice*** is now offered free, our Diabetics Division will provide extra copies to anyone wanting to help spread the word. We will gladly send from five to five hundred-plus copies each quarter to be used as free literature. Medical facilities can order as needed for patients. Individuals can usually place copies of the ***Voice*** in libraries, pharmacies, hospitals, doctors' offices, or other public locations.

Diabetes education is essential. Anyone who distributes the ***Voice*** will be helping people with diabetes, and their families, to learn about the disease and its ramifications; to learn that they have options; and that their world is far greater than whatever "limits" may be imposed by the disease. If you would like to help spread the word by distributing the publication, please contact: ***Voice of the Diabetic,*** 811 Cherry St., Suite 309, Columbia, MO 65201; telephone: (314) 875-8911.

Food for thought

We invite blurbs and tidbit articles for inclusion in this column. Materials received may be edited and used as space permits. Products and services included in this column are for information only and do not imply endorsement by The Diabetics Division of the NFB.

Diabetics Division member Nancy Scott brings a poet's perspective to blindness.

Hearing the Sunrise

by Nancy Scott

(This poem is dedicated to the light sensor on my kitchen windowsill.)

The sun rises in B major
to sing one verse of "My Way".
Pitch to remind, tempo to awaken,
twenty-three seconds of song
bordered by silence
serenade through any window
I choose
on any morning.
No long gazes.
No missed opportunities.
Twenty-three seconds
is more than enough time
when you hear the light.

New Food Labels

On May 1, new Federal guidelines for food labels came into force. Not only will the new policies discourage "fluff" advertising and enforce a standard presentation of contents, the new labels will also ease diabetic meal planning. The new labels include listings for saturated fat, total fat, carbohydrates, sugars, protein, cholesterol, and dietary fiber; vitamins and minerals; and intake guidelines based on both 2500 and 2000 calorie diets. Diabetic meal planning just got easier!

Diabetes and Blindness Seminar

On April 8 and 9, the National Federation of the Blind of Missouri and Missouri Rehabilitation Services for the Blind co-sponsored their first Diabetes and Blindness Seminar. Held at the Columbia Ramada Inn, the seminar began with a banquet, followed by the keynote address, which was delivered by NFB of Missouri President Gary Wunder. (Please see photographs at right.)

Then followed a unique demonstration of adaptive equipment and non-sighted techniques for blind diabetics, given by independent blind diabetics. The need to remain independent was a core theme of the entire seminar.

Free diabetes and blindness literature, in print, large print, Braille, and audiocassette was available. Ed Bryant, seminar facilitator, worked as "master of ceremonies".

Participants heard the latest from two doctors and a Certified Diabetes Educator, input from the Missouri Diabetes Control Program, and the latest interpretation of the Americans With Disabilities Act. Eight of the twelve presenters were type I diabetics.

Ed Bryant, president of the NFB Diabetics Division, discussed attitudes and options for blind diabetics. He listed the Division's many programs, the NFB's Job Opportunities for the Blind program, and the need to show blind diabetics that, whatever ramifications they have experienced, they are not alone, should not feel isolated, and do have options. He reminded the audience that the Division is an information and support network, like a big family, a forum for sharing ideas and experience. "We provide a source for information about any aspect of diabetes or blindness," he told them.

An Employment Panel followed, in which working blind diabetics shared with the audience how they get their jobs done. The message was clear: Very little is off limits!

Many members of the audience made it clear they wanted the seminar to happen again next year.

Highlights of April 8, 9 Seminar

NFB of Missouri President Gary Wunder delivers the keynote address.

Janet Lee (seated), of Cedar, MN, demonstrates equipment.

Betty Walker, of Jefferson City, MO, demonstrates equipment.

Eric Knoeppel (left), of Sikeston, MO, demonstrates equipment.

Tips on Testing

(From the Editor: This information first appeared in ***The Monitor,*** *Volume 3, No. 3, published by LifeScan, Inc. I found it a worthwhile discussion of a facet of home blood glucose monitoring not often discussed: clinical accuracy.)*

Q: Why can there be a difference between lab results and the results from your One Touch II system?

A: Most labs measure glucose in the fluid portion of the blood, which is either serum or plasma. One Touch II and One Touch Basic systems, as well as most blood glucose meters, are calibrated to read glucose levels in whole blood samples. Whole blood contains both blood cells and fluid. Plasma and serum have a slightly different glucose concentration than that of whole blood. Always check with your lab technician as to whether they are using whole blood or serum or plasma in the lab when doing a comparison.

Q: How do you do a comparison between serum or plasma to whole blood?

A: Take your serum or plasma lab result and divide this number by 1.12. The number (1.12) represents the approximate 12% difference between serum or plasma and whole blood glucose test results.

For example:
Your lab glucose result is 120 mg/dL.
120 divided by 1.12 = 107.14 mg/dL.

In this example, the 107.14 mg/dL represents the **whole** blood glucose equivalent of the serum-plasma glucose value. Using this example, you would then compare your meter result to 107.14 mg/dL. Your meter result should fall within 15 to 20 percent of the whole blood equivalent of the lab result.

Q: Are there other things I should be aware of in doing these comparisons?

A: Yes! Blood glucose levels can fluctuate significantly over short periods of time. Wide swings in glucose levels can also be caused by whether you have eaten or not. If attempting to make a lab to meter comparison, make sure samples are collected within a very short time of each other while you are fasting. Take your meter to the lab with you. Ask for their assistance in making the comparisons. Make sure you ask if they are using serum, plasma, or whole blood for their readings.

Low Vision Aid

We have been asked to announce: The OCU-AID Monocular helps people with poor central vision to more clearly see objects such as bulletin boards, traffic signs, house and office numbers, clocks, and the television screen. With its Micro Lens attachment, it aids reading small print such as mail, telephone directories, travel timetables, and business contracts. Retailing for $155, the OCU-AID is available from OCU-AID Enterprises, 1444 Cherokee Avenue, Columbus, GA 31906; telephone: (706) 323-6286.

NIH Diabetes Study

(Note: This article appeared in *AADE News,* Volume 20, No. 4, April 1994, published by the American Association of Diabetes Educators.)

In February, the National Institutes of Health (NIH) announced the first

large-scale clinical trial to determine if insulin-dependent diabetes mellitus (IDDM) can be prevented. This controlled, randomized study is designed to determine if immunization with insulin can prevent IDDM in individuals likely to develop the disease within five years. To carry on this effort, researchers at ten diabetes centers nationwide are recruiting relatives of people with type I diabetes, to be screened for two specific antibodies associated with eventual development of IDDM. It is estimated that between 60,000 and 80,000 screenings will need to be made in order to recruit the 830 volunteers needed for the study.

Each year, 11,000 new cases of type I diabetes are diagnosed in children and adolescents, making IDDM the second most common chronic disease after cancer in children in the U.S. The trial will cost approximately $30 million over the next five to seven years.

Tiny Talking Computer

We have been asked to announce: Humanware, Inc. announces the Keynote Companion, a compact talking computer with built-in programs specifically developed for use by visually impaired individuals at work, in school, or at leisure.

The world's smallest talking computer, the Companion weighs just 1.2 lbs., and is about the size of a VHS videocassette. MS-DOS 5.0 and Humanware's own KEYSOFT programs are permanently installed. The Companion will interface with any standard computer printer, and an external floppy disk drive is available. The unit is priced at $1795, or $1995 with external disk drive.

For more information about this or other adaptive computer products, or to receive their free catalog, contact Humanware, Inc., 6245 King Road, Loomis, CA 95650; telephone: 1-800-722-3393.

New NIH Glaucoma Study

We have been asked to announce: Recruitment has begun at Bascom Palmer Eye Institute of the University of Miami (Florida) School of Medicine, and 20 other centers around the nation, for a trial to determine whether medical reduction of intraocular pressure (the prime component of glaucoma) prevents or delays visual field loss and/or optic nerve damage in certain ocular hypertensives. This trial, the Ocular Hypertension Treatment Study, a long-term, randomized, multicenter clinical trial, is sponsored by the National Eye Institute, of the National Institutes of Health.

"Our clinic urgently needs the assistance of ophthalmologists, optometrists, and other health professionals in identifying candidates for this study," reported Richard K. Parrish, MD, Associate Professor of Ophthalmology at Bascom Palmer Eye Institute.

A wide variety of health professionals may be able to identify those at risk of ocular hypertension and glaucoma, which includes: People with diabetes or high blood pressure, those who are nearsighted, people with a family history of glaucoma, and those of African ancestry.

The clinics participating in the study are located in Florida, California, Georgia, Kentucky, Maryland, Michigan, Minnesota, New York, Ohio, Oregon, Pennsylvania, Texas, and the District of Columbia. For more information, or to discuss specific eligibility requirements, contact Dr. Parrish; telephone: (305) 326-6839.

Service Dogs

We have been asked to announce: INSIGHT ASSOCIATES is a non-profit organization established to enable "visually disabled" individuals to train their own service or service-guide dogs. Located in Tucson, Arizona, INSIGHT will serve only the ambulatory, visually disabled community. The organization is currently training its first class of instructors (Summer 1994). They plan to begin training visually disabled students in 1995.

The training and the dog are offered free to the student, who may be as young as age nine. Funding is sought from foundation grants, private donations, fundraising projects, retail sales items and community support. Most INSIGHT training assistants are volunteers.

For further information on INSIGHT ASSOCIATES, eligibility for the program, or the concept of service dogs, contact: Ms. Sharon Neja, 2730 S. Blackmoon Dr., Tucson, AZ 85730; telephone: (602) 886-4756.

Seeking Employment

Diabetics Division member Kerry Smith has asked us to announce that she is looking for employment. She states:

"My wide variety of work experience would makes me an excellent candidate for employment as a Counselor/Social Worker for agencies in the St. Louis area. I currently hold a BA in Social Sciences, including the following four divisions: Sociology, Psychology, History, and Education."

For resume, academic and professional references, contact: Ms. Kerry Smith, 1038 B Stoney Meadows Drive, Valley Park, MO 63088; telephone: (314) 225-2472. ■

ADVERTISERS

Effective advertising doesn't scream at its audience. It persuades. It sells. The key to cost-effective advertising is making your voice heard where an audience is already listening. *Voice of the Diabetic*, circulation 100,300+, offers such an outlet. Make *your* voice heard. For advertising information contact:

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811 Cherry Street, Suite 309 • Columbia MO 65201-4892
(314) 875-8911

Subscription/Donation Form

The ***Voice of the Diabetic*** is a quarterly magazine published by The Diabetics Division of the National Federation of the Blind (NFB) for anyone interested in diabetes, especially diabetics who are blind or losing vision. It is an outreach publication emphasizing good diabetes control, diet and independence.

Donations are gladly accepted and appreciated. Contributions are not only tax deductible but are needed to keep the ***Voice*** and the Diabetics Division moving forward to help people with all aspects of diabetes.

Members of the NFB Diabetics Division enjoy priority services and unique benefits such as a continuous free subscription to the ***Voice,*** automatic access to committees covering all aspects of diabetes, free counseling concerning all facets of blindness and diabetes as well as access to diabetics who have experienced complications.

The ***Voice*** is free to any interested person upon request. Each subscription costs the Diabetics Division approximately $20 per year. To help defray publication expenses, members are invited, and nonmembers are requested, to cover the subscription cost.

To begin receiving the *Voice*, *please check one:*

[ ] I would like to become a member of the NFB Diabetics Division and receive the ***Voice of the Diabetic.*** (Members are entitled to special membership benefits.)

[ ] I would like to receive the ***Voice of the Diabetic*** as a nonmember. (Nonmembers are encouraged to pay the institutional rate of $20/one year; $35/two years; $50/three years.)

Send the ***Voice*** in (check one):

[ ] print [ ] cassette tape for the blind and physically handicapped (recorded at slower-than-standard speed of 15/16 IPS) [ ] both

Optionally check this box:

[ ] I would like to make (or add) a tax-deductible contribution of $ _____ to The Diabetics Division of NFB.

Please print clearly

Name _____

Address _____

City _____ State _____ Zip _____

Telephone (_____) _____

Send this form or a facsimile to:
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Please make all checks payable to:
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